

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
1 February 2001 (01.02.2001)

PCT

(10) International Publication Number  
**WO 01/08163 A1**

(51) International Patent Classification<sup>7</sup>: **G21K 5/00,**  
C23C 14/02, 28/00

14870 (US). **HRDINA, Kenneth, E.** [US/US]; 8 Turnberry  
Drive, Horseheads, NY 14845 (US).

(21) International Application Number: **PCT/US00/18798**

(74) Agent: **MURPHY, Edward, F.**; Patent Department, SP TI  
3-1, Corning Incorporated, Corning, NY 14831 (US).

(22) International Filing Date: **10 July 2000 (10.07.2000)**

(25) Filing Language: **English**

(26) Publication Language: **English**

(30) Priority Data:  
60/145,057 22 July 1999 (22.07.1999) US  
60/149,840 19 August 1999 (19.08.1999) US  
60/158,813 12 October 1999 (12.10.1999) US

(81) Designated States (*national*): AE, AL, AM, AT, AU, AZ,  
BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE,  
ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD,  
MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD,  
SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ,  
VN, YU, ZA, ZW.

(84) Designated States (*regional*): European patent (AT, BE,  
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,  
NL, PT, SE).

(71) Applicant (*for all designated States except US*): **CORN-  
ING INCORPORATED** [US/US]; 1 Riverfront Plaza,  
Corning, NY 14831 (US).

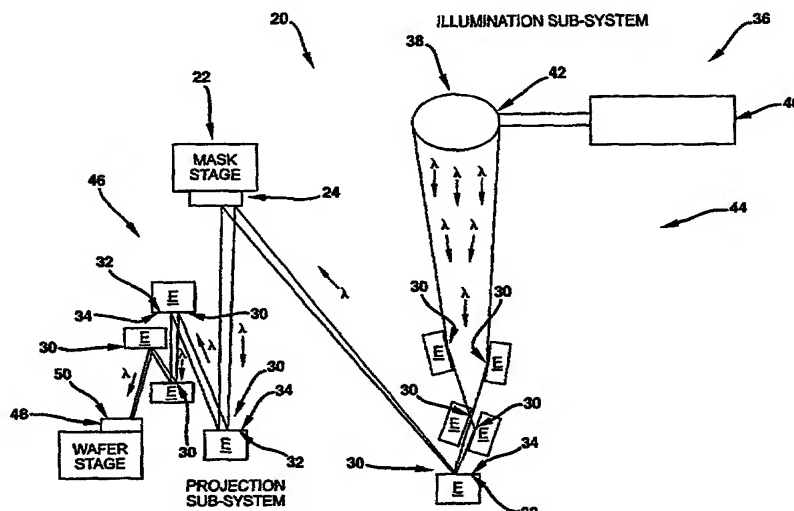
Published:  
— With international search report.

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **DAVIS, Claude, L.,  
Jr.** [US/US]; 3812 Meads Creek Road, Painted Post, NY

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: **EXTREME ULTRAVIOLET SOFT X-RAY PROJECTION LITHOGRAPHIC METHOD SYSTEM AND LITHO-  
GRAPHY ELEMENTS**



(57) Abstract: The projection lithographic method for producing integrated circuits and forming patterns with extremely small feature dimensions includes an illumination sub-system (36) for producing and directing an extreme ultraviolet soft x-ray radiation  $\lambda$  from an extreme ultraviolet soft x-ray source (38); a mask stage (22) illuminated by the extreme ultraviolet soft x-ray radiation  $\lambda$  produced by illumination stage and the mask stage (22) includes a pattern when illuminated by radiation  $\lambda$ . A protection sub-system includes reflective multilayer coated Ti doped high purity SiO<sub>2</sub> glass defect free surface (32) and printed media subject wafer which has a radiation sensitive surface.

WO 01/08163 A1